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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BP110187	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI2004/050165	International filing date (day/month/year) 15-11-2004	Priority date (day/month/year) 17-11-2003
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant Nokia Corporation et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (sent to the applicant and to the International Bureau) a total of 5 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 19-09-2005	Date of completion of this report 21-02-2006
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2004/050165

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: **Cover sheet**

INTERNATIONAL PATENT CLASSIFICATION (IPC) :

G06F 1/16 (2006.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FI2004/050165

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1 - 14 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 15 - 19 received by this Authority on 02-12-2005
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2004/050165

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-19</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-19</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-19</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

New amended claims have been filed.

Document cited in the International Search Report:

D1: JP 2003062268 A

The problem to be solved by the invention is to indicate for a user of a portable electronic device with a small display screen an event taking place in an image larger than the screen and outside the view on the screen.

D1 shows a display screen on a game machine surrounded by light units. The light units are individually controlled by a light driver. The light driver is controlled by the same CPU which is driving the display screen. The light units are said to be driven to match the display on the screen.

The invention according to claim 1 differs from D1 in that the display screen with surrounded light units according to D1 is not placed on a portable device, as in claim 1, but the idea of placing light units surrounding a display screen matching the display is known from D1. The matching according to D1, however, concerns what is shown on the screen, when in claim 1 it concerns something happening in a larger image outside the small screen. It is not considered to be obvious for a person skilled in the art to use a display screen known from D1 in a portable device of claim 1 with the function described in this claim.

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The same reasoning applies for the other independent claims 9, 18 and 19.

Therefore, the invention according claims 1-19 is novel and is considered to have inventive step and industrial applicability.

Claims

1. A portable device provided with a display unit (101, 201, 301) with information-indicating light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) in the surroundings of said display unit (101, 201, 301), **characterized** in that the portable device comprises:
- a controller (305) for defining control commands on the basis of a display unit application and an instantaneous view shown in the display unit (101, 201, 301);
 - a light driver (304) for controlling the information-indicating light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) based on the control commands, such that the information-indicating light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) are arranged to indicate information concerning an object located outside the current view of the display unit (101, 201, 301).
2. A device according to claim 1, **characterized** in that said device also includes a controller (305) for generating control commands for the light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) on the basis of the information transmitted by the display driver (303), to the light driver (304).
3. A device according to claims 1–2, **characterized** in that in the surroundings of the display unit (101, 201, 301), there are at least two light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 302a, 302b, 302c, 302d, 302e, 302f) or light unit groups (202e, 202f) formed of single light units, placed so that they are arranged at an angle of 90 degrees with respect to each other.
4. A device according to claims 1–2, **characterized** in that the light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) are placed around the display unit (101, 201, 301).
5. A device according to any of the preceding claims, **characterized** in that it is provided with a light driver (304) for controlling the light units (102a, 102b, 102c,

102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 302a, 302b, 302c, 302d, 302e, 302f) or the light unit groups (202e, 202f) formed of single light units.

6. A device according to any of the preceding claims, **characterized** in that it is provided with a controller (305) and a light driver (304) for controlling the light units
5 (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) according to the application shown in the display unit (101, 201, 301).

7. A device according to any of the preceding claims, **characterized** in that it is provided with a controller (305) for defining the control commands of the light units
10 (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) and for synchronizing the display unit (101, 201, 301) with respect to the view.

8. A device according to claim 7, **characterized** in that it is provided with a light driver (304) for controlling the functions and properties of the light units (102a,
15 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) according to the control commands generated by the controller (305).

9. A method for improving information execution capability of a display unit (101, 201, 301) of a portable device,
20 where in the surroundings of the display unit there are placed information-indicating light units_(102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f),

characterized in that the method comprises steps of

- defining in a controller (305) of the portable device a control command on the
25 basis of a display unit application and an instantaneous view shown in the display unit (101, 201, 301) in order to control the information-indicating light units;
- controlling the information-indicating light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) through a light driver (304) based on the control
30 command defined in the controller (305), such that information concerning an object located outside the current view of the display unit (101, 201, 301) is indicated by means of the information-indicating light units (102a, 102b,

102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f).

10. A method according to claim 9, **characterized** in that in the controller (305), there are generated functional commands to the light driver (304) in order to
5 control the light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) on the basis of the information of the view in the display unit (101, 201, 301), transmitted by the display driver (303) and the application of the display unit (101, 201, 301).

11. A method according to claim 9 or 10, **characterized** in that the light units
10 (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) are arranged in the surroundings of the display unit (101, 201, 301), at an angle of 90 degrees with respect to each other, in order to indicate the direction, with respect to the view shown in the display unit (101, 201, 301), by means of the light units (102a, 102b, 102c, 102d, 102e, 102f,
15 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f).

12. A method according to any of the preceding claims 9–11, **characterized** in that the light units are arranged in light unit groups (202e, 202f), each of which groups can be separately controlled by the light driver (304).

13. A method according to any of the preceding claims 9–12, **characterized** in that in the display unit (101, 201, 301), there are shown objects under observation, and simultaneously the light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) controlled by the light driver (304) are used for generating information in the view
25 of the display.

14. A method according to any of the preceding claims 9–13, **characterized** in that the approaching of an object located outside the view of the display unit (101, 201, 301) to the area of the view shown in the display unit (101, 201, 301) is indicated by generating in the light driver (304) a sense stimulus by means of
30 those light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) that are located in the same direction with respect to the view as the target in question.

15. A method according to claim 14, **characterized** in that the light driver (304) is used for controlling a controllable light unit group (102a, 102b, 102c, 102d, 102e,

102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f), located in a given direction with respect to the view of the display unit (101, 201, 301), so that the intensity of the light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) is increased as the object approaches the display unit.

16. A method according to any of the preceding claims 9–15, **characterized** in that the threatening factors of the game application represented in the view are indicated by adjusting the controllable light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) that is located in the direction of the threatening factor with respect to the view by means of the light driver (304) to emit a given wavelength of light, and possible proceeding directions are indicated by controlling the controllable light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) that is located in the direction of the proceeding direction with respect to the view by means of the light driver (304) to emit another given wavelength of light.

17. A method according to any of the preceding claims 9–16, **characterized** in that in the application shown in the view, the direction of a given searched target that is located outside the view, with respect to the view is indicated by activating the controllable light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) located in the direction of the target by means of the light driver (304) in a given way defined in the application.

18. A software for improving information execution capability of a display unit (101, 201, 301) of a portable device, **characterized** in that it includes steps:

- there is defined a given controllable light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) composed of light units (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) arranged in the surroundings of the display unit (101, 201, 301) on the basis of the application and an instantaneous view shown in the display unit (101, 201, 301);
- there are generated, on the basis of the application of the display unit (101, 201, 301), certain control commands in order to control the defined light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c,

202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) according to the application and the instantaneous view of the display unit (101, 201, 301) and an object located outside the current view, and;

- the generated control commands are transmitted to a light driver (304) in order to control the defined light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) for giving information about the object located outside the current view of the display unit (101, 201, 301).

19. A system for improving information execution capability of a display unit (101, 201, 301) of a portable device, **characterized** in that it includes

- software means for defining a controllable light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) on the basis of the information of the application shown in the display unit (101, 201, 301) and an object located outside the current view of the display unit, and;
- software means for generating certain control commands on the basis of the information of the application of the display unit (101, 201, 301) and the object located outside the current view of the display unit in order to control a given light unit group (102a, 102b, 102c, 102d, 102e, 102f, 102g, 102h, 202a, 202b, 202c, 202d, 202e, 202f, 302a, 302b, 302c, 302d, 302e, 302f) for giving information about the object located outside the current view of the display unit (101, 201, 301).

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